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Lars-Erik Peters

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EXAMINER

WOOLWINE, SAMUEL C

ART UNIT

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1637

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/661,428	Applicant(s) PETERS, LARS-ERIK	
	Examiner SAMUEL WOOLWINE	Art Unit 1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-35 and 43-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-35 and 43-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status

Applicant's reply entered 12/10/2007 is acknowledged. Claims 15-35 and 43-48 are pending in the application (claims 43-48 newly added).

The rejection of claim 26 under 35 USC 112, 2nd paragraph, made in the previous Office action (OA 07/10/2007) is withdrawn in view of Applicant's amendment.

The rejection of claims 15-19 under 35 USC 102(b) over Asada et al (WO 00/14218) are maintained for the reasons of record and reiterated below, and is applied to new claim 48. The rejection of claims 22 and 32-34 is withdrawn in view of Applicant's amendment to claim 22 reciting a "pre-inhibited thermostable polymerase" which is not explicitly taught by Asada. The composition pointed to by the examiner in the rejection comprised sodium alginate. Although this is a "sulfated polysaccharide" (see paragraph [0053] of the published instant application), alginate is not specifically mentioned in Applicant's disclosure. Therefore, the examiner cannot rely on inherency to meet the "pre-inhibited" limitation of the amended claims. A new rejection under 35 USC 103(a) over Asada is set forth below.

The rejection of claims 22-29, 32 and 35 under 35 USC 102(b) over Schinazi et al is maintained for the reasons of record and reiterated below.

The rejection of claims 15 and 17-21 under 35 USC 103(a) over Ueno et al (USPN 4, 840,941) in view of the 1988 Stratagene Catalog are withdrawn in view of Applicant's amendment to claim 15. Neither Ueno nor Stratagene teach "at least 1.5 mM magnesium" or "between about 35-100 mM monovalent cations".

The rejection of claims 22-32 and 35 under 35 USC 103(a) over Diring et al (US 5,153,181) in view of Jurkiewicz et al has been converted to a rejection under 35 USC 102(b) over Diring et al, based on Applicant's deletion of the limitation requiring monovalent cations between 35-60 mM in claim 22.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-19 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Asada et al (WO 00/14218, the March 16, 2000 publication of international application PCT/JP99/04815) as evidenced by Uemori et al (USPN 6,673,578). As the Asada reference was published in Japanese, US Pat. 6,673,578 (which resulted from the national phase entry of PCT/JP99/04815 under 35 U.S.C. 371) will be used as an English translation, and all teachings will be pointed out with reference to the '578 patent.

Asada teaches both a composition for polynucleotide (i.e. DNA) synthesis (beginning at column 3, line 20) and a kit for use in practicing the method (beginning at column 12, line 33).

With regard to claim 15, Asada teaches a kit (column 12, line 33) comprising a thermostable polymerase (column 12, lines 40-45 and line 58; "Taq" is *Thermus aquaticus* DNA polymerase, which is thermostable), a non-nucleic acid polyanion

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("acidic substance"; column 13, lines 10-19 and column 9, lines 34-63; for example polyvinyl sulfates, polystyrene sulfates (column 9, line 38), sulfated-fucose-containing polysaccharides, dextran sulfate (column 9, lines 46-47)), and an appropriate polymerase reaction buffer (column 13, lines 31-34).

Asada also teaches:

"Incidentally, as a composition of a reaction mixture, there may be used a reaction mixture having a composition suitable for DNA polymerase used. Here, the term "composition suitable for DNA polymerase" means a composition capable of providing optimum conditions such as optimum kinds of buffers, optimum pH, optimum salt concentration (magnesium salt, and the like), optimum dNTPs concentration, optimum amount of primers and other additives." (column 4, lines 10-20, emphasis provided)

Asada gives exemplary optimal concentrations of magnesium (2 mM, which is at least 1.5 mM) and potassium (50 mM, which is between about 35-100 mM; potassium is a monovalent cation). See column 4, lines 32-35.

Finally, Asada clearly states:

"The above DNA polymerase, the acidic substance and other reagents may be contained in the kit in a state where each is present as an independent component, or a state in which some of the components are combined, including, for instance, a state in which the components are added to the reaction buffer and the like." (column 13, lines 34-39)

With regard to claim 16, Asada teaches *Thermus aquaticus* (i.e. Taq; column 12, lines 40-45 and line 58).

With regard to claim 17, Asada teaches dextran sulfate (column 9, lines 43-47).

With regard to claim 18, Asada teaches nucleotide 5'-triphosphates (column 13, line 32).

With regard to claim 19, Asada teaches primers (column 2, lines 48-54 and column 13, lines 50-53, for example).

With regard to claims 15 and 48, the recited instructions to not patentably distinguish over the kit taught by Asada. In *In re Ngai*, 70 USPQ2d 1862 (CAFC 2004), the court found that a claim directed to a kit for performing a method of normalizing and amplifying ribonucleic acids was properly rejected as anticipated by prior art, even though the content of the instructions in the claimed kit differed from the instructions in the prior art, since addition of a new set of instructions into the known kit merely teaches a new use for an existing product, in that the instructions do not interrelate with the kit so as to produce new product. Therefore, the addition of printed matter to an existing product will not distinguish an invention from the prior art in terms of patentability if the printed matter is not functionally related to product. See MPEP 2112.01(III).

Response to Arguments

Applicant's arguments filed 12/10/2007 have been fully considered but they are not persuasive. Applicant argues on page 5 of the response that Asada does not teach a kit for polynucleotide synthesis wherein a non-nucleic acid polyanion is combined with a thermostable polymerase to inhibit DNA synthesis in a temperature dependent manner, as required by claim 15." This argument is not persuasive because this is a recitation of intended use that does not distinguish over the old kit taught by Asada. Furthermore, claim 15 does not require a non-nucleic acid polyanion to be combined with a thermostable polymerase to inhibit DNA synthesis in a temperature dependent manner. Rather, this is what the "instructions" of the claimed kit direct one to do. However, as discussed in the rejection, the recited instructions to not patentably distinguish over the kit taught by Asada.

Furthermore, Applicant's arguments as to the magnesium and monovalent salt limitations are not persuasive, as Asada clearly teaches these limitations. Applicant's arguments as to the instructions limitations have already been addressed in the rejection.

Asada clearly teaches a kit comprising the recited components. Applicant's intended purpose for such components, though different than Asada's, does not patentably distinguish over Asada's kit. See MPEP 2112(I):

"[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Claims 22-29, 32 and 35 rejected under 35 U.S.C. 102(b) as being anticipated by Schinazi et al (Antimicrobial Agents and Chemotherapy, 1989, vol 33, no 1, pp 115-117).

With regard to claim 22, Schinazi teaches a composition (a reverse transcription reaction) comprising a thermostable polymerase (HIV-1 reverse transcriptase; see Table 1 and caption) and a non-nucleic acid polyanion (dextran sulfate, i.e. DS-8,000 and DS-1,340, see Table 1 and caption and see page 115, column 2, lines 1-2).

With regard to the limitations "a pre-inhibited thermostable polymerase" and "reversibly bound", these are regarded as inherent properties of the composition taught by Schinazi. Schinazi teaches dextran sulfate (see below), which according to Applicant has the property of reversibly binding and inhibiting the thermostable polymerase. Since Schinazi teaches a composition having these two components, and

in fact documents an inhibitory effect of the dextran sulfate on enzyme activity, reversible binding and inhibition must inherently take place. The term "pre-inhibited" merely implies that Applicant intends the composition is to be used for some purpose wherein the polymerase either remains inhibited or wherein the inhibition is reversed. In either case such recitations of intended use do not distinguish over the composition taught by Schinazi. Furthermore, the term "storage buffer" is not defined in the specification in such a way as to distinguish over the composition taught by Schinazi, which contains all the elements recited in the claim.

With regard to claims 23-25, Schinazi teaches dextran sulfate of either 8,000 da or 1,340 da (see Table 1 and caption, see also page 115, column 2, lines 1-2).

With regard to claims 26-29, Schinazi teaches dextran sulfate (see Table 1 and caption) as recited in claim 29, which must therefore satisfy the limitations of claims 26-28, since claims 26-29 are successively dependent and culminate in a group of compounds which includes dextran sulfate.

With regard to claims 32 and 35, Schinazi teaches HIV-1 reverse transcriptase (see Table 1 and caption).

Response to Arguments

Applicant's arguments filed 12/10/2007 have been fully considered but they are not persuasive. Applicant argues on page 8 of the response that Schinazi does not teach a pre-inhibited thermostable polymerase composition or kit. As a preliminary matter, the rejection does not hold that Schinazi teaches a kit. Therefore, Schinazi was only applied under 35 USC 102 against claims 22-29, 32 and 35, which claims do not

recite kits. Furthermore, as discussed in the rejection, the word “pre-inhibited” in the claim merely implies that Applicant intends something to happen *after* such inhibition, which carries no patentable weight in a claim to a product. Neither does the term “storage buffer” distinguish over Schinazi, since this term is not defined in the specification in any manner whatsoever.

Applicant also argues that “a pre-inhibited thermostable polymerase composition...is not inherent in the teachings of Schinazi”. This argument is not persuasive because (1) the composition taught by Schinazi contains all elements recited in the claims and (2) Schinazi actually *shows* the inhibitory effect of dextran sulfate on the polymerase (see entire article). Therefore, in Schinazi's composition, there *must exist* polymerase in an inhibited form.

Claims 22-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Diringer et al (US 5,153,181).

With regard to claim 22, Diringer teaches a composition comprising a thermostable polymerase (HIV reverse transcriptase, see figures and column 6, lines 43-49) and a non-nucleic acid polyanion in the composition: dextran sulfate of various molecular weights, chondroitin sulfate, pentosan polysulfate, etc (column 4, lines 28-39, and see column 6, lines 1-22 and the figures).

With regard to the limitations “a pre-inhibited thermostable polymerase” and “reversibly bound”, these are regarded as inherent properties of the composition taught by Diringer. Diringer teaches, among other substances, dextran sulfate, which

according to Applicant has the property of reversibly binding and inhibiting the thermostable polymerase. Since Diringer teaches a composition having these two components, and in fact documents an inhibitory effect of the dextran sulfate on enzyme activity (see figure 1A-D and column 6, lines 1-22), reversible binding and inhibition must inherently take place. The term "pre-inhibited" merely implies that Applicant intends the composition is to be used for some purpose wherein the polymerase either remains inhibited or wherein the inhibition is reversed. In either case such recitations of intended use do not distinguish over the composition taught by Diringer. Furthermore, the term "storage buffer" is not defined in the specification in such a way as to distinguish over the composition taught by Diringer, which contains all the elements recited in the claim.

With regard to claims 23-25, Diringer teaches dextran sulfates with molecular weights of 5000, 8000 and 500000 (see column 4, lines 28-39).

With regard to claims 26-29, Diringer teaches dextran sulfate, as recited in claim 29 (see column 4, lines 28-39), which must therefore satisfy the limitations of claims 26-28, since claims 26-29 are successively dependent and culminate in a group of compounds that includes dextran sulfate.

With regard to claims 30 and 31, Diringer teaches at least one assay in which dextran sulfate of molecular weight of 500000 was used in and HIV RT assay (see figure 1D, solid squares connected with solid line (see column 6, lines 8-9)). For the reaction having 10^2 $\mu\text{g/ml}$ (see figure 1D), this calculates to 0.2 μM based on the molecular weight of 500000, and thus satisfies the ranges recited in the claims.